


MINISTRY OF TRANSPORT

STATISTICAL PAPER No.5

SURVEY OF  
ROAD GOODS TRANSPORT  
1962  
METHODOLOGICAL REPORT



LONDON: HER MAJESTY'S STATIONERY OFFICE

1966

## FOREWORD

The present paper is the third of a series of reports on the Survey of Road Goods Transport 1962. The first two reports were published by H.M.S.O. during 1964; one report gave details of the transport work performed by road goods vehicles and the characteristics of the vehicle fleet, the second report contained information on the commodities carried by road transport. The present booklet forms the methodological report on the Survey; it contains a description of the way the survey was carried out together with detailed information on the more technical aspects of the survey work, such as design of sample, accuracy of the results, etc.

# CONTENTS

	Page
Introduction	
Chapter	
I The Goods Vehicle Index	2
II Design of Sample	4
III Drawing the Sample	8
IV Design of Questionnaire	10
V Organisation of the Survey	10
VI Response	18
VII Accuracy	19
VIII Cost of the Survey	22
IX Some Lessons	22
Appendix	27
Copies of the questionnaires used for the survey	
(a) The questionnaire for public haulage vehicles	29-32
(b) The questionnaire for 'C' licence vehicles of unladen weight not exceeding 1 ton	33-36
(c) The questionnaire for 'C' licence vehicles of unladen weight exceeding 1 ton	37-40



## I. THE GOODS VEHICLE INDEX

In 1961 the Ministry of Transport began to construct a revised list of road goods vehicles. Previously, an index of vehicles based on carriers' licensing records had been available at the 13 Traffic Area offices situated throughout the country, but this list was known to contain a large number of errors and because it had not been overhauled for many years it included a large number of 'dead' entries, i.e. vehicles which had been scrapped, operators who had gone out of business, etc. Moreover, as the index consisted of slips of paper pecked into binders it was not particularly suitable for use as a sampling frame. For these reasons it was desirable that a revised index of vehicles in a form suitable for drawing samples from it should be compiled for the 1962 survey of road transport.

Owing to the very large numbers involved (nearly 1½ million vehicles) the construction of a complete index was an impossible task in the time available. However, three-quarters of the total number of goods vehicles are light vehicles operated on own account and these vehicles, although numerous, perform only a small part of the total work done by road transport. An index which excluded these light 'C' vehicles would be a list of less than ½ million vehicles but it would cover those vehicles which between them account for over 85 per cent of all road transport in Great Britain.

Thus, plans were made for a limited index comprising all public haulage vehicles and the larger vehicles operated on own account, i.e. all 'C' vehicles of over 3 tons unladen weight. The index was to be accommodated on punched cards, one card to each vehicle licensed. The card showed the vehicle's registration number, its licence category, unladen weight, and the number of the carrier's licence under which it is operated.

A revised index of public haulage vehicles fully checked and overhauled was completed by the end of 1961. The progress on the 'C' licence index was not so rapid, however, and the proposed card index for these vehicles was not available in time for the 1962 survey. This meant that the samples of 'C' vehicles had to be drawn by a different method to that employed for public haulage vehicles (see Chapter III).

The index work was eventually completed in 1963 and a comprehensive list of all public haulage vehicles and all 'C' vehicles of unladen weight exceeding 3 tons - some 400,000 vehicles in all - is now available at the Ministry of Transport. The lists are completely mechanised so that very little clerical effort is involved in the up-dating procedure (which is performed monthly) and in the quarterly counts to determine the numbers of vehicles in use. The only main clerical operation which is necessary is associated with the coding operations prior to the preparation of the punched cards. A copy of the coding document which is used is reproduced overleaf; a vehicle card is punched from the data given on each line of the form. These documents are completed from information supplied by the operator when an application is being made for a carrier's licence.

It will be noticed that in addition to the carrier's licence number, vehicle registration mark, unladen weight and licence category, the present vehicle cards include details of the vehicle's body type, its year of first registration and, for those vehicles operated on own account, the industry served. Since the old, unrevised, index did not include such a wide range of data, the additional information is not recorded on the cards for those vehicles on carriers' licences prior to 1963, and it is not possible to make use of the new data at present. Over the years, however, as the index includes more and more vehicle cards incorporating the full details, statistics of vehicles analysed by body type, industry served, etc., can be made available from the index.

### *Statistics from the new index*

In addition to fulfilling the need for an adequate sampling frame, the new index provides more accurate statistics on numbers of vehicles on various types of licences than had hitherto been available. The benefits of this are twofold. First, the trends in numbers of vehicles in each licence category, unladen weight group, etc., can be accurately assessed. Secondly, when conducting sample surveys, a reliable estimate of the total number of units in the population that is being sampled is available and this not only simplifies the survey work but also enables a more accurate estimate of the transport performed to be derived.

Full details of public haulage vehicles analysed by unladen weight, licence category and area of operation are available from the index. Similar information is also available for 'C' vehicles of over 3 tons unladen weight and although figures of the light 'C' vehicles cannot be derived from the

# ADDITIONS(1) TO GOODS VEHICLE INDEX

FOR WEEK ENDING \_\_\_\_\_

VEHICLE REGISTRATION NUMBER										MAIN BUSINESS OF OWNER* (3)												
Letters					Figures					Letters					YEAR (2)		TYPE OF BUS*					
Licence Class*					CARRIERS LICENCE NUMBER					YEAR (2)					TYPE OF BUS*							
INTEGRATION PROJECT*					YEAR (2)					YEAR (2)					TYPE OF BUS*							
1					2					3					4		5		6		7	
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goods vehicle index, it is possible to estimate their numbers by reference to the statistics of vehicle excise licensing.

The vehicle excise statistics are collected annually by means of a sample census carried out in the excise licensing authorities. They show the numbers of goods vehicles in use each year analysed by unladen weight, but they do not provide a breakdown between different types of carrier's licence. However, reliable figures for public haulage vehicles are available from the new index so that estimates of light 'C' vehicle can be derived as the difference between the numbers of public haulage light vehicles and the total number of light vehicles shown by the excise licensing statistics to be licensed as general goods vehicles or haulage tractors.

### *Index of operators*

At the same time as the index of goods vehicles was being constructed, lists of operators were also being compiled at the Ministry. These lists are now complete so that the Ministry was able to publish in 1964, for the first time, statistics of public haulage operators analysed by size of fleet. These will be followed during 1965 by similar analyses for the operators of the larger 'C' licence vehicles.

The operator index shows for each operator, his name, address, and the number of vehicles he owns analysed by licence category, together with the carrier's licence numbers under which they are operated. The index is at present in two parts. The first part, comprising a slip of paper, shows the operator's name and address. The second part contains the fleet details; these are derived from the goods vehicle index. The carrier's licence number, which appears in both parts of the operator index, is used as the means of cross-reference, and it is also used to refer from the vehicle index to the operator index and vice versa.

Updating of the name and address details in the operator index occurs monthly, while the fleet details are compiled annually. The first operation is performed by hand, but since the fleet details are obtained from the goods vehicle index, these are compiled by mechanical means. Consideration is being given to the complete mechanisation of the index of operators.

As most of the information is collected from operators on a confidential basis, the Ministry's index of operators is a confidential list.

## II. DESIGN OF SAMPLE

As the Ministry had conducted two previous sample surveys of road goods transport, one in 1952 and the other in 1958, the results of these surveys and the experience gained from them, particularly the one in 1958, could be used in the design of the 1962 sample survey.

Both the 1952 and 1958 surveys had been fairly small enquiries covering some 7,000 vehicles and collecting data in respect of only one week during the year. It was intended that the 1962 Survey should be a much larger enquiry and that the periods in respect of which data were collected should be spread so that the seasonal changes could be charted and a better estimate obtained of the transport work performed during the full year. A sample of some 40,000 vehicles was therefore planned and this number fairly evenly divided between the survey periods, which consisted of a week in each quarter of the year. Thus, in effect four successive surveys occurred, each covering one week and each comprising roughly 10,000 sample units (i.e. vehicles).

The type of sampling adopted was a stratified random sample. For a number of reasons, not the least of which was the need to facilitate comparison with the results of 1958 survey, the same stratification as that employed in the 1958 survey was used: the vehicles were classified in three ways, by Traffic Area, licence class, and unladen weight. The total number of cells was 312 (13 Areas, 4 licence classes, 6 unladen weight groups); but as the area classification was inserted mainly for convenience when drawing the sample (the vehicle index is kept in Traffic Area order), the results of the survey were analysed by licence class and unladen weight only (24 cells).

The sampling fractions varied as between the licence class and unladen weight strata but the same licence class/unladen weight cell sampling fraction applied in each Area. Thus, within a cell, the number of vehicles chosen from a Traffic Area was proportional to the number of vehicles licensed in the Area.

In order to determine the sampling fraction for each cell, the standard deviation about the cell mean and the standard error obtained in the 1938 survey were computed. It was then possible to calculate for a given sample size of 40,000 vehicles, the optimal allocation between the various strata that would minimise the standard error in the overall estimate of work done by road transport. At the same time, however, the possibility of using a single, uniform, sampling fraction was explored, that is, whether the increased accuracy expected from optimal allocation was sufficient to justify the increased work in processing the survey results arising from the use of variable sampling fractions.

Compared with the uniform sampling fraction where the optimal scheme showed a comparatively small increase in overall accuracy, reducing the standard error in the overall estimate of ton mileage performed from about 0.8 per cent to 0.3 per cent. On the other hand, both the optimal scheme and the uniform fraction produced some unacceptably large stratum errors and since satisfactory estimates of work done by various types of vehicle was almost as important as an acceptable estimate of the total work done by all vehicles, it was decided to try a further sampling scheme. This scheme, which was the one finally adopted, employed only four sampling fractions and these were allocated between strata so that the standard error would in each case be within an acceptable limit, i.e.  $\pm 5$  per cent. The fractions were 1 in 5 and 1 in 10 for public haulage vehicles, 1 in 10 and 1 in 50 for 'C' vehicles over 1 ton unladen weight and 1 in 500 for the very light 'C' vehicles of unladen weight not over 1 ton. These fractions had the additional advantage of being easy to handle when the results of the sample were being grossed up. Their distribution between the various strata is shown by Table (i).

As the survey was being spread over four separate weeks, for each week the sampling fractions became 1 in 20, 1 in 40, 1 in 200 and 1 in 2,000. Thus, Table (i) also shows the fractions relating to a single survey week and gives, as an example, the number of samples required for the third survey week.

#### *Allowance for wastage*

Since particular importance was attached to the ease of grossing up the results of the sample survey, it was decided that steps should be taken to ensure that the realised sampling fraction, that is, the sample number eventually obtained, should be the same as the exact sampling fraction (as shown by Table (i)). To achieve this it was necessary to safeguard against loss of sample units through various causes, such as, non-response, defects in the frame, etc.; this was done by drawing a greater number of sample units than were shown to be required by the exact sampling fraction.

Following its revision, the index for 'A', Contract 'A' and 'B' vehicles (i.e. public haulage) was thought to be comparatively free from defects. Also, judging from the experience of the 1938 survey the response from public hauliers was likely to be good. Thus, an allowance of 10 per cent was estimated to be sufficient to counteract wastage amongst the larger public haulage vehicles of unladen weight exceeding 3 tons, and 15 per cent for the lighter vehicles.

In the case of the 'C' licence vehicles, the sampling frame was the unrevised index and this was known to contain a high proportion of dead entries. Moreover, the response rates for the lighter 'C' vehicle operators were expected to be lower than amongst the public hauliers. Therefore, a 15 per cent allowance was made for wastage amongst the heavier 'C' vehicles and 20 per cent for wastage amongst the lighter vehicles. In addition, since the 'C' vehicle sample had to be drawn for all four survey weeks at the start of the survey, as the year progressed the sample became increasingly defective and the allowance for wastage had to be increased slightly for each survey week.

This method of safeguarding against a shortage of realised samples meant that after the survey had been carried out it was unlikely that the number of usable returns would correspond exactly with the number of sample units required in each cell. Most calls would have more sample units than were needed so that some of the returns would have to be rejected. Where returns relating to 'A', Contract 'A' or 'B' vehicles had to be rejected the 'last in - first out' procedure could be used since the method of sample selection permitted identification of the units which were last to be selected (see Chapter III ahead). In the case of 'C' vehicles however the interval system had to be used; for example, if the total usable returns received in a call was 100, and the number of units to be rejected was 10, then every 10th return was rejected.



CELL SAMPLING FRACTIONS AND NUMBER OF SAMPLE UNITS  
REQUIRED FOR ONE SURVEY WEEK

Table (i)

licence category	Unladen weight <u>Over</u> <u>Not over</u>		Sampling fraction (whole survey)	Single survey week		
				Goods vehicle population*	Sampling fraction	Number of sample units
A		1 ton	1/5	486	1/20	24
	1 ton	2 tons	1/5	5,051	1/20	253
	2 tons	2½ tons	1/5	7,157	1/20	358
	2½ tons	3 tons	1/10	21,508	1/40	538
	3 tons	5 tons	1/10	39,564	1/40	989
	5 tons		1/10	15,915	1/40	398
	Total			89,681		2,560
Contract A		1 ton	1/5	407	1/20	20
	1 ton	2 tons	1/5	787	1/20	39
	2 tons	2½ tons	1/5	1,101	1/20	55
	2½ tons	3 tons	1/10	4,416	1/40	110
	3 tons	5 tons	1/10	15,422	1/40	386
	5 tons		1/10	6,799	1/40	170
	Total			28,532		780
B		1 ton	1/10	3,441	1/40	85
	1 ton	2 tons	1/10	5,788	1/40	145
	2 tons	2½ tons	1/10	7,725	1/40	193
	2½ tons	3 tons	1/10	19,306	1/40	483
	3 tons	5 tons	1/10	33,350	1/40	831
	5 tons		1/5	3,940	1/20	197
	Total			73,450		1,935
C		1 ton	1/500	546,400	1/2000	274
	1 ton	2 tons	1/50	330,040	1/200	1,650
	2 tons	2½ tons	1/50	70,787	1/200	354
	2½ tons	3 tons	1/50	98,042	1/200	490
	3 tons	5 tons	1/50	138,170	1/200	691
	5 tons		1/10	40,936	1/40	1,024
	Total			1,226,395		6,403
Total all vehicles				1,418,438		9,758

\* The population varied for each survey week. The figures given in the above table are in respect of the quarter ended 30th September 1962 and are the populations used for the third survey week, 1st-7th October 1962.

### *Supplementary sample of 'C' vehicles*

The final problem in sample design concerned the treatment of vehicles which, because they came into operation in the interval between the drawing of the sample and the actual week of the survey, had had no chance of being included in the sample. In the case of public haulage vehicles, since the interval between drawing the sample and the survey week itself was very short (not more than a month) the problem was not an important one. But in the case of 'C' licence vehicles, as the whole sample had to be drawn at the start of the survey, provision had to be made for those vehicles which came into operation after the main sample had been drawn. This was done by keeping a special list of these vehicles (analysed by appropriate unladen weight strata) and selecting an additional sample from this list.

### *Selection of survey weeks*

The choice of sample weeks was dictated by practical considerations. Counts to determine the vehicle population occurred at the end of each quarter so that it was desirable to take a sample week as soon as possible after the date to which the population numbers related. Also, the weeks chosen had to be normal weeks, that is, they had to be as representative of the other 12 weeks of the quarter as possible, and, to this end, weeks immediately preceding and succeeding a major holiday period were avoided. The sample weeks selected were 2nd to 8th April 1962, 2nd to 8th July 1962, 1st to 7th October 1962, and 7th to 13th January 1963.

A sample week was not chosen for the first quarter of 1962 because the preparations for the survey were not sufficiently advanced for an inquiry to be carried out during that quarter. A corresponding week in 1963 had to be included and the results obtained for the first quarter of 1963 adjusted to a first quarter 1962 basis using supplementary data obtained from roadside traffic counts (see ahead).

The number of sample periods in each quarter was limited to only one week because a greater number of sample weeks would have thrown too great a strain on the resources available for the survey. The sample week started at midnight on Sunday and ended at midnight the following Sunday. Every journey undertaken by the selected vehicle during that period was recorded.

### *Expansion factors for survey weeks*

Since one week in every 13 was sampled, the results obtained for the sample week could be grossed up by multiplying by a factor of 13. This would be a crude method, however, since it would not allow for the incidence of holiday periods and the variation in numbers of working days from one quarter to another. A more refined method would be one based on number of working days, Saturdays and Sundays respectively in the sample period compared with the numbers of similar days in the quarter as a whole, but it was possible to refine the method still further and to take into account the monthly variation in goods vehicle traffic.

Thus, estimates of work done in a survey week were grossed up in two stages. The first stage entailed grossing up the estimates of work done in a survey week into an estimate for the month in which the week occurred. The expansion factor used for this purpose was obtained by dividing the total number of weekdays, Saturdays and Sundays (respectively) in the month by the number included in the survey period and compiling a single, weighted, average of the products; the weights used were the estimated proportions of transport work done on weekdays, Saturday and Sunday. When counting to determine the number of weekdays in a month, public holidays which fell on weekdays were excluded and were counted as Sundays.

The second stage was the expansion of the estimate of work done in the month into an estimate for the whole quarter. Information is available from the traffic counts showing the monthly variation in goods vehicle mileage during 1962 so that the appropriate grossing up factor could be derived from this source.

The sum of the estimates thus obtained for the four quarters yielded an estimate of work done by road transport in the period 1st April 1962 to 31st March 1963. To provide an estimate for the calendar year 1962, the estimate obtained for the first quarter of 1963 was adjusted to a first quarter 1962 basis according to the change in goods vehicle mileage between the two periods revealed by the traffic counts.

### III. DRAWING THE SAMPLE

Two different types of frames were available from which to draw a sample of vehicles for the survey; there was a punched card index of public haulage vehicles and a loose-leaf index of 'C' licensed vehicles. This meant that two different methods had to be employed for drawing the sample.

#### Public haulage vehicles

Since the card index of public haulage vehicles was fully mechanised, samples could be drawn by a completely random process. The method used was as follows. Before each survey week the vehicle cards, which were already in Traffic Area order, were sorted into licence category/unladen weight cell order. A six digit random number was allotted to each cell and on the basis of the last two digits of the vehicle registration mark (these digits being considered least likely to introduce an age bias\*), a sample was selected from each cell population by means of a mechanical sorter.

The selection occurred in two stages. First a sort occurred on the final digit of the vehicle registration mark, selecting those vehicles whose registration mark ended in a number corresponding to the first digit of the cell random number; this usually yielded a much larger number of units than were required. Secondly, sorting occurred on the next to last digit of the vehicle registration mark. For this sort the second digit of the cell random number was used, then the third, fourth, etc., until the number of units in the sample equalled or exceeded the number required. If the number was in excess, random rejection occurred. An example is shown below:-

Random number for cell: 367542

Cell population: 800 vehicles

Sampling fraction: 1/20

Sample units required: 40 vehicles

(a) First, outsort on last digit of vehicle registration mark extracting the 2's. This yielded a first stage sample of, e.g., 100 vehicles.

(b) Using the first stage sample, outsort on next to last digit of vehicle registration mark extracting:-

(i) the 6's yielding, e.g., 15 vehicles

(ii) the 7's yielding, e.g., 12 vehicles

(iii) the 5's yielding, e.g., 15 vehicles

(c) Excess of units in the sample as the result of extracting the 5's is 2, reject the last two vehicles selected. (If the number to be rejected was large, however, every nth vehicle would be rejected; the interval being determined by dividing the number yielded by last sort by the number in excess).

If the number of units obtained after the first sort was less than the number required, a second extraction was made on the last digit of the vehicle registration mark using another numeral picked from the cell random number. A sample was drawn separately from each Traffic Area, but the same cell random numbers applied in each Area. A new selection of random numbers was made for each survey week.

When the sample in each cell had been drawn, the selected cards were placed in order of carrier's licence number and listed by tabulator. These lists were then used for referring to the operator index, from which the names and addresses of the operators of the vehicles selected were derived. The lists were also designed to serve as the survey response register for public haulage vehicles.

\* A vehicle's registration mark in Great Britain in 1962 normally consisted of two or three letters and one to four figures, for example: ABC 453. Vehicles were registered in letter-numeral order, e.g. AJ, AG ..... A999, A91 ..... etc.

# 'C' licence vehicles

As the revised index for 'C' licence vehicles was not available in time for the survey, the manuscript index at Traffic Area offices had to be used as the sampling frame for these vehicles and the sample extracted manually by the interval method.

In each Traffic Area, beginning at a random point in the index, each nth\* sheet (vehicle) in the index was withdrawn. This first stage sample was then divided into the appropriate unladen weight groups and the number obtained in each cell was determined. The number obtained, divided by the number of sample units required in the cell gave the sampling interval that would yield the second stage sample. An example is as follows:-

## TRAFFIC AREA: 'A'

Table (ii)

Unladen weight Over <u>          </u> <u>Not over</u>		(1) Number of sample units required for all survey weeks	(2) Numbers obtained after first stage sampling	(3) Sampling interval for 2nd stage, Col. (2) ÷ (1)	Numbers obtained after second stage sampling
1 ton	1 ton	400	4,279	1/10	428
2 tons	2 tons	1,100	2,611	1/2	1,305
2 tons	2½ tons	640	836	1/1	836
2½ tons	3 tons	990	1,060	1/1	1,060
3 tons	5 tons	1,010	6,209	1/6	1,035
5 tons		1,610	1,915	1/1	1,915
Total		5,750	16,910		6,579

Since the 'C' vehicle sample for all four survey weeks had to be drawn at the start of the survey, a further sampling stage was necessary before the sample for each week could be determined. The third stage involved a random selection from the units obtained at the second stage. For example, for the cell 3 to 5 tons shown in Table (ii), the 1,035 units obtained at the second stage were inserted into a revolving drum and units drawn from the drum until the number required for the first survey week was obtained. (The existence of this third stage meant that the numbers obtained at the second stage could be well in excess of the number required, for example, see unladen weight group 'over 5 tons' in Table (iii)). Units which had been selected at the third stage were not re-included in the second stage universe for the purpose of selecting sample units for subsequent survey weeks.

The main difference between the method of drawing samples of public haulage vehicles and the method used in the case of the 'C' licence vehicles was that a public haulage vehicle had a chance of being included in each of the survey weeks (samples were drawn from the whole population before each survey week), whereas except for the supplementary sample, see page 7, the 'C' licence vehicle had the chance of being included only once in the whole of the survey.

\* Because of work that had been done in connection with setting up the revised index, the manuscript index was in two parts, one part including all 'C' vehicles not exceeding 3 tons, the other including vehicles over 3 tons. Thus, two sampling intervals could be used, 1 in 30 for the light vehicles and 1 in 6 for the heavy vehicles.

#### IV. DESIGN OF QUESTIONNAIRE

Copies of the questionnaire used for the survey, together with the notes and definitions issued for the guidance of persons completing the form are shown in the Appendix. Three versions of the survey form were used, one version for public haulage vehicles and two versions for vehicles operated on own account.

The questionnaire sent to public hauliers sought details of the fleet in which the selected vehicle was operated\*, the characteristics of the selected vehicle such as its size, age, etc., and the work done by the vehicle during the survey week. The form used for vehicles of unladen weight exceeding 1 ton operated on own account was similar to the one used for public haulage vehicles except that the question on industry served by the 'C' vehicles replaced the section on size of fleet, and information was sought on the type of work on which 'C' vehicles were mainly engaged during the survey week, i.e. whether on retail delivery and so on. The form sent in respect of the smaller 'C' vehicles was a much simplified version of the one sent in respect of the larger vehicles.

The questionnaires used for each survey week were identical except that they were differently coloured. This device helped to distinguish each week's sample when the returns were being processed. The questionnaire was designed with a view to facilitating data processing and it was subjected to a small trial run by putting it to a selected number of operators before it was used in the main survey.

#### V. ORGANISATION OF THE SURVEY

Since the organisation of an inquiry and the methods used to process the information collected depend to a very large extent on the resources which are available for the survey, it would be advantageous to open this chapter with an account of the personnel which were allocated to the 1962 survey of road transport and the mechanical aids that were at their disposal.

##### Resources

###### (a) Personnel

About 35 clerks, divided into three teams with an Executive Officer in charge of each, were made available for the survey and these persons were employed full time on survey work for a period of 2 years, from mid-1961 to mid-1963. Half the staff were then transferred to other duties connected with the goods vehicle index while half were retained on the survey to complete the analysis of the results; it is estimated that this work will not be completed until mid-1965.

In addition, to assist with the organisation, a Senior Executive Officer was allocated to the survey and this officer was employed full time on survey work for about 14 years. The Statistician in charge of the survey devoted time to the survey throughout its course.

These estimates of people employed do not include the staff of the Division's machine unit - the punch operators, machine assistants and supervisors, who drew the sample of public haulage vehicles and handled the mechanical processing of the survey data as part of their routine duties.

###### (b) Mechanical equipment

The main equipment available for survey work was the Division's punched card unit. This comprises two Hollerith tabulators, types 852 and 853, a reproducing gang summary punch, two sorters, a numerical collator, punches and verifiers. These machines are manned by six punch operators and five machine operators.

In addition to the punched card unit, a number of desk calculators were made available to survey staff. These machines ranged in size and complexity from simple adding machines to the more advanced electric calculators. The ratio of desk machines to clerical staff was approximately one machine to every five people.

\* Since the sample units were vehicles and not operators, the results of the survey will have to be re-weighted before the data on fleet characteristics can be used.

## *Preliminary planning*

To ensure efficient use of the resources that were available, it was essential that the survey work should be carefully planned. The preliminary work fell into four stages. First, it was necessary to decide what analyses of the survey results would be required. Secondly, the detailed arrangements for dispatch of questionnaires and handling returns had to be decided. Thirdly, a time-table to govern the start and completion of the several phases of the survey had to be worked out. Finally, plans had to be made to ensure that the inquiry was sufficiently well publicised.

### (a) Information required

Because of inadequate information about the pattern of road transport and since it was expected that fields of further interest would be revealed by the survey results, the full range of the data to be derived from the survey could not be decided at the preliminary stage. But the main lines along which investigations were to proceed were sufficiently clear for plans to be drawn up for the organisation of the survey work and for a suitable card punching code and machine programme to be devised. The main information to be derived from the survey was as follows:-

- (i) Data on the characteristics of road goods vehicles, such as, carrying capacity, body type, age, type of fuel used, etc., and in the case of vehicles operated on own account, the type of work on which they are engaged and the industry they serve.
- (ii) Estimates of the work done by road transport; the number of journeys undertaken, tonnage carried, ton mileage performed, analysed by length of haul, licensing category, type of vehicle, etc.
- (iii) Detailed analysis of the type of commodity carried.
- (iv) Data on the movements of freight by road between the main centres of population and industry and various other geographic regions of Great Britain.

The plans for the organisation of the survey work and the punched card system were made sufficiently flexible to meet whatever extra analyses were shown by the survey results to be required.

### (b) Form handling

Since the normal postal services were to be used for sending out the forms no special arrangements were necessary for dispatch of the survey questionnaires. The receipt of returned questionnaires necessitated a number of operations however and these were divided into four stages:-

- (i) recording the receipt of the completed return from the operator;
- (ii) scrutiny of the return for completeness, consistency, credibility and agreement with sample;
- (iii) clearance of queries, if any;
- (iv) registration as part of the realised sample if the return was acceptable for subsequent processing.

It was clearly convenient to combine in one document the receipt (response) register, the record of correspondence and the registration of acceptance (steps (i), (iii) and (iv) above). The lists of sample units drawn, produced for public bus/motor vehicles by tabulator (see page 12) and for 'C' licensed vehicles by hand, was the document used for this purpose.

### (c) Time-table

In order to compile a time-table for the various phases of the survey work, a number of test runs were made on the forms. These enabled estimates to be derived of the time required for drawing the sample, for preparing and dispatching the questionnaires, for recording receipt of completed forms, for issuing reminders, clearing queries, etc. These estimates could then be used to check whether the staff available was sufficient to cope with the work, and that one week's survey would be completed before preparations had to be made for the next survey week.

Estimates were also prepared of the time required for processing the data given in the returned questionnaires, so that the approximate duration of the survey work could be ascertained and rough dates could be fixed for publication of survey results.

#### (d) Publicity

It was believed that good advance publicity of the aims and purposes of the survey would be instrumental in achieving a high response rate from operators. Press releases were therefore issued by the Ministry and letters were sent to hauliers' associations asking them for their co-operation. The associations were extremely co-operative and in addition to expressing their support for the survey, they gave it wide-spread publicity in their journals.

#### *Dispatch of questionnaires*

After the sample had been drawn and listed the preparations for dispatching the questionnaires could proceed. Gilded labels to fit the address panels printed on the questionnaire were prepared. The labels showed the vehicle registration mark, the carrier's licence number (which served as the correspondence reference) and his name and address. More than one copy of the labels were prepared simultaneously since the additional copies could be used to address reminders if needed. The labels were then stuck onto the questionnaires which had been designed to fit into 'window' envelopes through which the address panel could be easily read.

Distribution of the survey questionnaires was made by the normal postal services and the forms were dispatched about a week in advance of the start of each survey period. This gave operators time to return the form if the vehicle was no longer in their possession and a chance for the survey staff to trace the new owner and re-address the form to him. It also gave operators an opportunity to make arrangements with their staff to collect the required data.

Operators were asked to return the completed questionnaire by a specified date, usually about two weeks after the survey period. If the return had not been submitted by that date, a reminder was issued: this gave the operator a further week in which to make his return. If a form had still not been received by the end of that week, a final reminder which carried threat of prosecution if a return was not made within seven days was sent to the operator by recorded delivery.

On average, about 70 per cent of all forms sent were returned without need of a reminder. A further 10 to 15 per cent were returned after the first reminder, so that comparatively few final reminders were required. Most of the remaining forms were returned after the final reminder, but as the 1962 Survey was carried out under the statutory powers embodied in the Statistics of Trade Act 1947, operators could be prosecuted by the courts for failure to make a return. About 4 per cent of the operators who received a form failed to make a return after receipt of a final reminder, but not all these were prosecuted: it was decided that solicitor's letters giving warning of intention of taking proceedings against the operator would be sent only to perpetual offenders. These were defined as operators who had been included in a previous phase of the survey and had failed to make a return. During the survey, solicitor's letters were sent to 18 operators and of these, since they continued to refuse to submit a return, three were prosecuted, each one successfully.

#### *Handling returned questionnaires*

Written instructions were issued to the staff to cover all aspects of the receipt, scrutiny and processing of the returned questionnaires.

#### (a) Receipt

On receipt of a completed form or a letter from an operator nullifying the choice of a vehicle, the first action was to record the receipt in the appropriate register (see page 11). 'Null' entries were made when the vehicle chosen had been scrapped or was no longer licensed for use, the operator had gone out of business or could not be traced, or the vehicle had been sold and the survey staff had not been able to re-direct the questionnaire. Since an allowance for wastage had been included in the design of the sample a 'null' marking for a vehicle would eventually lead to its deletion from the sample and its random replacement by another vehicle. The numbers of 'null' vehicles reported during the survey amounted to about 10 per cent of total number of forms sent out (for further details see Chapter VII).

Vehicles which were licensed for use but which were idle during the survey because of lack of work, repairs, holidays, etc., and vehicles which although licensed as goods vehicles were employed for purposes other than goods transport during the survey week or on transport operations off the public highway, were not classified as 'null' vehicles. They were classified as part of the accepted sample of vehicles, but a record was kept of their numbers and the operational statistics for those vehicles which were not used for goods transport or for goods transport off the public highway were excluded from the main survey results.

#### (b) Scrutiny and clearance of queries

The next stage after recording receipt of the completed questionnaire involved scrutiny and application of consistency checks. Forms were checked for completeness, consistency between parts, and a number of credibility checks were also applied, for example, that the load per journey was credible in relation to the carrying capacity of the vehicle (and of trailer if used).

The staff performing the scrutiny were not required to investigate the faults which they detected, but to indicate them as covering slip for clearance by clerks specialising in the handling of queries. It was hoped that by this means any pattern in the faults which were being experienced would be quickly revealed and clearance of queries could be effected speedily and with the least amount of reference back to the vehicle operators. In the event, there was very little pattern in the faults that were found. The commonest fault, about 15 per cent of all defective replies, was an omission either to show or to distinguish empty return journeys. The second most common defect was the failure either to complete or else to return the sheet bearing Parts 1 and 2 of the questionnaire.

Staff were instructed that to avoid delay and to eliminate paper work all queries should be cleared with the operators over the telephone if possible; operators had been instructed to include their telephone number on their returns.

#### (c) Acceptance

After the scrutiny had been completed and any difficulties cleared up, the return was accepted into the realised sample. Its acceptance was recorded in the register, each return and the register entry being marked with a serial number for subsequent identification. An automatic hand numbering machine was used for this purpose.

At this stage the correctness of the unladen weight group in which the vehicle was recorded was checked. The register was already set out in unladen weight group order, and an accepted vehicle was sought in the group appropriate to the unladen weight declared on the questionnaire. If it was not there, it was sought in neighbouring groups and if the difference between the unladen weight shown by the operator's return and that indicated by the register was greater than a quarter of a ton, the vehicle was transferred to its correct group. The number of transfers was very small in the case of rigid vehicles and although a fair number occurred in the case of articulated vehicles, where it was obvious that the weight of the semi-trailer had been omitted in the vehicle index, as a percentage of all forms handled it was small, not more than 5 per cent.

Transfers of sample units between cells after the sample had been drawn presented a problem which had not been allowed for in the sample design. But such transfers were necessary in order to obtain the most reliable estimates of the mean mileage, tonnage, and ton mileage performed by vehicles in each cell.\*

#### Processing

Once a return had been accepted for the survey, processing the information it contained could commence. During the preparatory work for the survey, it had been decided that the data processing would occur in three stages. Some basic statistics concerning the work done by road transport and the characteristics of the goods vehicle fleet would be extracted first; then detailed information on the commodities carried would be obtained; finally, the geographical analysis of the transport flows would be derived.

\* The transfers arose because of defects in the goods vehicle index and together with the numbers of 'null' vehicles encountered during the survey, this information could be used to establish revised estimates of the universe, see Chapter IX.



Although the division of the work in this fashion affected the organization of the data processing by creating more separate operations to plan and organize, more form handling, more clerical work in the long run, more hand punching of cards and less flexibility in the employment of machines, the division into three stages meant that the organization was less complex, work flow was smoother, parallel working of clerical and machine processes was more feasible, and there was less machine work in total. It was also possible to function with fewer staff, spreading the whole job out in time. Furthermore, some of the main results of the survey could be made available fairly quickly after the close of the enquiry.

As things turned out, the reduction of total machine work was an important benefit. This came about because the first stage required the handling of far fewer cards than the other stages, only about 38,000 compared with about 60,000 cards for the commodity analysis and nearly 700,000 for the geographical analysis. Both punch room and machine room staff could only devote part-time to the survey, so that the reduction in pressure on staff and machines was a crucial factor in the early production of first results.

#### Stage 1

In terms of arithmetical work, the first stage entailed the calculation of the ton-mileage performed on each journey and the addition of the total mileage, tonnage and ton-mileage performed by each vehicle during the survey week.

The derivation of ton-miles from journey-lengths and loads was carried out as a first step, using desk calculating machines. In the case of end-to-end journeys, i.e., trips which involved carrying loads from a single pick-up point to a single destination, the calculation was a simple one involving multiplication of tonnage carried on the journey by distance travelled. In the case of the intermediate journeys, i.e., those journeys which involve setting down or picking up goods at several points during the journey, the calculation was slightly more complex since an allowance had to be made for the changing load factor. For these journeys ton-mileage was therefore a product of tonnage carried times loaded mileage times a factor of two-thirds.

The two-thirds factor used in estimating ton-mileage for intermediate journeys is somewhat arbitrary. An investigation into the loading/discharging pattern for goods vehicles of various types employed on intermediate work was made when the survey was being planned. This showed that the appropriate factor could range from half to three-quarters or more depending on the type of work on which the vehicle was engaged and the shape of the journey it was making. An arbitrary figure of two-thirds was taken because it lay within the range indicated and it was a factor that could be handled easily by the processing staff. It should be noted that since the work done on intermediate journeys amounts to less than a third of all transport performed by road goods vehicles, the amount of error introduced into the estimate of total ton-mileage performed because of the use of the two-thirds factor instead of, say, a half or possibly three-quarters, is very small, being in the region of 5 per cent.

When a ton-mileage figure had been calculated for each journey on which a load was carried, the total loaded mileage, empty mileage, tonnage and ton-mileage performed by each vehicle during the survey period was determined. Fractions of miles, tons and ton-miles were eliminated by rounding upwards for half-units or more and deleting anything less than half a unit. Credibility tests were applied to the totals obtained for each vehicle. The number of journeys undertaken analysed by length, the number of days the vehicle was not used for carrying goods during the survey week, and the number of journeys on which a trailer was used, was also calculated.

The data were then transcribed from the returns on to coding forms, from which punched cards were prepared. A coding form is reproduced overleaf. It will be seen that the form bears column numbers but only abbreviated column titles; the full titles were supplied to the coding staff in the form of templates for fitting over the coding forms. This device reduced the amount of wording on the form and helped to speed up the punching. One such template is also illustrated overleaf.

Tradition has it that for a punching document a vertical arrangement of data is best, but the horizontal lay-out was employed on the express preference of the punch operators. Irregular groupings were adopted to give visual assistance to clerical and punch-room staff, and the achieved punching rate proclaimed that a "Class A" (first rate) document resulted.



The first stage analysis resulted in the creation of a punched card including the details shown above for each vehicle accepted for the sample. Before the cards could be sorted and tabulated, however, it was necessary to check that the cards obtained in each cell corresponded with the exact sample required for the cell. Allowances had been made for wastage, non-response, etc., in the number of questionnaires sent out, so that most cells required extraction of sample units. The methods of identifying the cards to be discarded has already been described in Chapter II, page 5. A record of the discarded cards was kept so that a similar treatment could be applied to the returns themselves. The exact sample size was therefore available for the second and third stages of the data processing before the computational work commenced.

#### Stage 2

Since a ton-mileage figure had been derived for each journey during the first stage of the analysis, the computational work for the commodity stage consisted merely in totalling the tonnage and ton-mileage of each commodity carried during the survey week. A code number of the group in which the commodity appeared in the E.C.E. classification was then entered against the commodity, and the tonnage, etc. figures and code number were then transcribed onto the coding document. A specimen of the document used is given below.

#### STAGE 2 COMMODITY ANALYSIS CODING FORM

Serial Number	Lic. Used	Tons	Ton-Miles	Commodity	Industry *
<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
1 2 3 4 5	6 7	8 9 10	11 12 13 14 15	16 17	18 19
<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
1 2 3 4 5	6 7	8 9 10	11 12 13 14 15	16 17	18 19
<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>

\*

\* 'C' license vehicles only

A punched card was created for each type of commodity\* carried by a vehicle. The form serial number was used as the means of identifying the commodity cards with the first stage 'vehicle' card.

#### Stage 3

As each journey made had to be recorded separately for the geographical analysis, the final stage involved no computational work. The coding work was complex, however, due to the large number of place-name codes that had to be used for recording origin and destination. Also, in the case of intermediate journeys there was need to establish the furthest point from base reached on the journey; this part of the journey was treated as the outward trip. The rest of the journey formed the inward trip and was treated as a separate journey. A copy of the coding form is as follows.

\* For details of the commodity groups used, see Appendix to the 'Survey of Road Goods Transport 1962, Final Results, Commodity Analysis'.

# STAGE 3 GEOLOGICAL ANALYSIS CODING FORM

(1)						(2)		(3)	(4)	
Geographical Code				Licence Group		Tons carried	Commodity	Journey Length	Industry	Miles
Origin	Destination			Class	Factor					
1	2	3	4	5	6	7	8	9	10	11

## Notes

- (1) First digit of code is in respect of the Standard Region while the second digit applies to selected areas within the Region, for example, '52' signifies South Eastern Region, London area.
- (2) Four categories of journey length were used: under 25 miles, 25 to 49 miles, 50 to 99 miles, 100 miles and over.
- (3) <sup>10</sup> licence vehicles only.
- (4) Where the tonnage carried on the journey was less than 1 ton, codes 1, 2, and 3 were used to represent  $\frac{1}{2}$ ,  $\frac{1}{3}$  and  $\frac{1}{4}$  ton, respectively.

A punched card was created for each journey made by a vehicle. The total number of geographical cards was very large, nearly 700,000 in all, but the incidence of repetitive journeys was high - more than three-quarters of the journeys were of a routine nature, identical to a number of other journeys made by the same vehicle in the same week - so that it was possible to limit the coding and hand-punching to less than one third of the eventual size of the file. For the repeated journeys, the coding clerk entered the number of identical journeys against the code entry, and the punch operator punched this number into the card. A collator with card counter was then used to insert blank cards after each master card to a number one fewer than that indicated, and these were then gang-punched. This recourse to gang-punching reduced the hand-punching from 680,000 cards to 208,000 cards and since the cards had been sorted into tabulation order before collation, the sorting work was also much reduced.

## Tabulating the results

At all stages, while the punching and verifying were proceeding, the machine work was organized. The required tables of results were analysed in order to determine the most economic order in which to undertake the machine tabulation (chiefly to minimize the sorting) and to establish combinations whereby several totals might be derived from single tabulating runs. Tabulator control panel circuitry was then worked out and tested, test packs were created, and flow charts were prepared to help card sorting, collating and tabulating. Between verifying and machining, vetting operations were carried out so that impossible punchings and internal inconsistencies would be revealed before they could do harm.

The machine tabulations provided data covering the work of a sample of vehicles during a sample week. Before the final tables of results could be compiled, the figures had to be grossed up to provide estimates for the whole of the vehicle population during the whole quarter in which the sample week was situated. The expansion factors for the vehicle population were simply the inverse of the sampling fractions, but the expansion from the survey week to a whole quarter introduced factors which varied for each of the four survey weeks. The grossing up was performed with the aid of desk calculating machines and ready reckoners which had been specially compiled by progressive accumulation on a punched-card tabulator.

## VI. RESPONSE

Operators' response to the inquiry was very good; out of some 46,500 forms dispatched, 44,500 were returned. The rate of response varied between the licence categories, being highest amongst operators of 'A' licensed vehicles and the larger vehicles operated on own account, but in all categories it was over 90 per cent. The figures are as follows:-

### RESPONSE RATES

Table (iii)

Percentages	
Licence category	
A	97
Contract A	93
B	94
Public haulage	96
C, not over 3 tons	95
C, over 3 tons	97
Own account transport	96
All road transport	96

Although only 2,000 forms were lost because of non-response, not all the returns received were acceptable for inclusion in the survey. A small number, some 500 in all, were unacceptable because they were incomplete or contained suspect entries and the survey staff did not succeed in clearing the queries with the operator. A further 5,000 of the returns that were made indicated that because of defects in the frame from which the sample had been drawn, the choice of the vehicle had to be nullified.

The reasons for nullifying the choice of a vehicle have been analysed and the results are summarized in Table (iv) below. The main reason was that the vehicle had been sold and it had not been possible to re-direct the form to the new operator in time for the Survey; this accounted for over 40 per cent of the 'null' vehicles. The next most numerous reason was that the vehicle had been scrapped, accounting for 20 per cent of the nulls.

### REASONS FOR NULLIFYING CHOICE OF VEHICLE

Table (iv)

Reason	Percent of null vehicles
1. Vehicle scrapped	22
2. Vehicle not licensed	10
3. Operator no record of vehicle	4
4. Operator out of business	10
5. Operator not traceable	11
6. Vehicle sold; unable to re-dispatch form to new owner	42
7. Vehicle on hire to another operator	1
Total	100

Loss due to non-response, defects in the frame and incomplete returns had been expected, and to safeguard against their effect on the size of the realized sample a greater number of questionnaires than was required on the basis of the exact sampling fraction had been sent out (see Chapter II).

## VII. ACCURACY

At the time the present report was being prepared, the survey results had not been analysed in sufficient detail to enable a full appraisal to be made of the accuracy of the information obtained from the 1962 survey of road transport. But frequency distribution, etc. had been derived in respect of the first survey week and on the basis of these analyses an indication can be given of the error which arises in the estimates of miles, tons and ton miles in the 1962 survey from the fact that the estimates are based on a sample of vehicles, not on a complete enumeration.

The figures are given in Table (v) for each licence category/unladen weight cell. The sampling error is expressed in terms of standard error and this is given in percentage terms so that it may be applied to both the cell mean and the estimate of the total mileage, tonnage and ton mileage performed by all the vehicles in each cell. For example, from the Table it is seen that the percentage standard error in the estimate of the average mileage performed by an 'A' licence vehicle of unladen weight not exceeding 1 ton and in the estimate of the total mileage performed by these vehicles is  $\pm 7.3$  per cent. That is to say, the probability is about two to one that the 'true' figure (i.e. the figure that would result from a complete census) for the mean mileage and total mileage lies within the range indicated by the standard error, i.e. 11,500 to 13,300 miles ( $12,400 \pm 7.3$  per cent) and 5.1 to 5.9 million miles ( $5.5 \text{ million} \pm 7.3$  per cent) respectively, and about twenty to one that it lies within the range indicated by twice the standard error, i.e. 10,600 to 14,200 miles ( $12,400 \pm 2 \times 7.3$  per cent) and 4.7 to 6.3 million miles ( $5.5 \text{ million} \pm 2 \times 7.3$  per cent) respectively.

The percentage standard error in the estimate of the mileage, etc. performed by vehicles in each licence category and by road transport as a whole is also shown in Table (v). The standard error in the estimate of the tonnage carried by road transport in 1962 is  $\pm 0.9$  per cent, indicating that the probability is about twenty to one that the true figure lies within the range 1,225 to 1,370 million tons (i.e. 1,248 million tons  $\pm 2 \times 0.9$  per cent). In the estimate of the ton mileage performed it is  $\pm 0.6$  per cent, indicating a range of 33,200 to 34,000 million ton miles at the twenty to one probability level (i.e. 33,600 million ton miles  $\pm 2 \times 0.6$  per cent).

In addition to the random error arising from sampling vehicles however, there is also the error which arises because information is collected in respect of a sample period during the year instead of for the year as a whole. It is not possible at present to estimate the amount of error introduced by sampling over time, but in the case of the estimates of total mileage, tonnage and ton mileage performed by road transport during 1962, the error would probably be very small. There are two reasons for this. Firstly, as the survey results showed, there is very little seasonal variation in the amount of transport performed by road vehicles; the difference between Winter and Summer, periods of least activity, and Spring and Autumn, periods when activity is highest, is of the order of 4 to 6 per cent only. Secondly, when grossing-up the survey results from survey week basis to whole quarter (13 week) basis, supplementary information about the month-by-month variation in goods vehicle mileage was available from the road-side traffic counts and these variations were allowed for in the grossing-up factor.

The error arising from sampling over time becomes more important when estimates of the quantities of various commodities carried by road are being derived. As the 1962 survey showed, considerable seasonal variation occurs in the carriage of particular commodities, and in order to make adequate allowance for this variation a sufficient number of sample periods must be taken during the year. The 1962 survey covered only four sample weeks, one in each season, and this must be regarded as the minimum number required. Possibly, the accuracy of the estimates of the tonnage and ton-mileage of the various commodities moved by road during 1962 would have been much increased by spreading the survey over a larger sample of weeks.

A further possible source of error in the estimates of ton mileage derived from the survey is the use of an arbitrary factor of two-thirds for calculating the ton mileage performed on intermediate journeys. As indicated on page 20 this could give rise to an error of  $\pm 5$  per cent in the estimate of total ton mileage performed by road transport.

Table (v)

Licence category		Unladen weight	Estimate (1)										Standard error (per cent.)	
			Means (Numbers)					Totals (Millions)						
			Miles	Tons	Ten miles	Miles	Tons	Ten miles	Miles	Tons	Ten miles			
A.	Over	Not over	12,490	360	3,700	5.5	0.2	2	13.5	13.5	10.5	10.5		
	1 ton	11,160	560	8,700	55.6	4.6	41	4.6	41	5.9	5.9			
	2 tons	9,560	1,250	16,300	68.3	8.8	117	8.8	117	5.2	5.2			
	3 tons	13,520	1,550	36,700	290.9	52.6	766	52.6	766	4.4	4.4			
	5 tons	36,100	2,540	124,700	1014.0	102.8	4,822	102.8	4,822	1.6	1.6			
Contract A.	All 'A' vehicles	..	..	293,000	535.1	1969.5	205.7	10,309	0.8	1.0	1.0	1.0		
	1 ton	14,500	920	4,500	5.7	0.1	2	0.1	2	6.8	6.8			
	2 tons	16,400	1,500	11,800	12.2	0.4	9	0.4	9	6.8	6.8			
	3 tons	23,500	2,000	20,500	66.7	8.3	22	8.3	22	4.9	4.9			
	5 tons	22,000	3,440	106,500	267.7	51.3	1,542	51.3	1,542	3.0	3.0			
B.	All Contract 'A' vehicles	..	..	245,100	721.2	93.7	3,447	1.2	2.2	2.2	2.2			
	1 ton	7,500	140	1,800	23.8	0.4	6	0.4	6	11.0	11.0			
	2 tons	8,700	350	4,400	47.2	1.0	24	1.0	24	5.0	5.0			
	3 tons	9,300	1,480	13,000	63.3	1.3	99	1.3	99	4.8	4.8			
	5 tons	19,300	1,070	36,000	264.0	38.1	493	38.1	493	1.6	1.6			
All public haulage vehicles	All 'B' vehicles	..	..	165,600	1067.7	20.2	3,470	0.9	1.5	1.5	1.5			
	1 ton	7,000	90	1,500	3187.5	41.8	587	41.8	587	9.0	9.0			
	2 tons	8,400	250	3,900	2428.9	60.4	1,129	60.4	1,129	4.0	4.0			
	3 tons	9,100	470	11,400	615.4	51.8	769	51.8	769	4.0	4.0			
	5 tons	11,500	1,100	21,500	1080.8	104.7	2,051	104.7	2,051	1.4	1.4			
All road transport	All 'C' vehicles	..	..	132,200	10335.0	738.5	16,303	1.3	1.4	1.4	1.0			
	1 ton	7,000	90	1,500	3187.5	41.8	587	41.8	587	9.0	9.0			
	2 tons	8,400	250	3,900	2428.9	60.4	1,129	60.4	1,129	4.0	4.0			
	3 tons	9,100	470	11,400	615.4	51.8	769	51.8	769	4.0	4.0			
	5 tons	11,500	1,100	21,500	1080.8	104.7	2,051	104.7	2,051	1.4	1.4			

(1) These figures were originally published in Tables 18, 19, 20 and 28 of Part I of the report on the survey.

Finally, it should be noted that the tonnages reported during the survey were sometimes based on the operator's estimate of the weight of the load carried. This could be a cause of considerable error in the tonnage and ton mileage figures obtained from the survey and, to safeguard against this, during the preliminary work for the survey particular attention was paid to the operator's method of assessing the load on the vehicle. These investigations showed, however, that in most cases operators knew the exact weight of the load on the vehicle and in those cases where an estimate had to be given, the operator's estimate was usually an extremely good one. Thus, the amount of error arising from this cause is probably very small.

#### Standard deviations

As well as calculating the standard error of the estimates obtained from the survey, it would also be useful to examine more closely the variability of the sampled material and, for this reason, from the special analysis of the results of the first survey week, the standard deviation of the activity of a single unit has been derived for each cell. The standard deviation expressed as a percentage of the cell mean (coefficient of variation) is shown in Table (vi) ahead.

In most cells the standard deviation is large. There are two reasons for this. Firstly, many of the vehicles sampled were idle during the survey week or were being used for purposes other than goods transport and the presence of zero entries for mileage, tons and ton mileage in respect of these vehicles increases the standard deviations considerably. Secondly, since vehicle unladen weight was used as a basis for stratification and, as the survey results have shown, the unladen weight is only a very broad guide to a vehicle's carrying capacity, in many cells some units were picked up whose weekly tonnage and ton mileage were high compared with most of the other vehicles in the cell. The presence of these high values also increases the standard deviations quite considerably. (Stratification based on carrying capacity would have been more satisfactory, but unfortunately the frame used for the survey does not permit classification on a basis other than unladen weight).

Since the sampled material has this fairly large degree of variability, the usefulness of the mean as a measure of the transport performed by the average vehicle within a particular licence category/unladen weight cell is limited. For many purposes, therefore, greater detail will be required concerning the amount of transport done by different types of vehicle, for example, it will be advisable to show the numbers of vehicles in each cell which perform various mileages, tonnages and ton mileages. The Ministry hopes to make such data available in due course.

#### STANDARD DEVIATION AS A PERCENTAGE OF THE MEAN OF EACH CELL \*

Table (vi)		Percentages			
Licence category	Unladen weight		Coefficient of variation		
	Over	Not over	Miles	Tons	Ton miles
A.	1 ton	1 ton	74	123	105
	2 tons	2 tons	87	128	115
	2½ tons	2½ tons	87	125	120
	3 tons	3 tons	84	114	124
	3½ tons	3½ tons	87	87	96
Contract A.	4 tons	4 tons	45	87	79
	1 ton	1 ton	52	69	58
	2 tons	2 tons	62	91	85
	2½ tons	2½ tons	76	109	93
	3 tons	3 tons	97	167	154
B.	3½ tons	3½ tons	66	119	82
	4 tons	4 tons	62	95	77
	1 ton	1 ton	103	92	202
	2 tons	2 tons	111	123	119
	2½ tons	2½ tons	95	103	138
C.	3 tons	3 tons	94	123	125
	3½ tons	3½ tons	70	97	91
	4 tons	4 tons	75	113	96
	1 ton	1 ton	115	116	160
	2 tons	2 tons	127	126	159
	2½ tons	2½ tons	95	141	143
	3 tons	3 tons	87	140	134
	3½ tons	3½ tons	77	134	109
	4 tons	4 tons	87	125	92

\* Based on an analysis of only 1 week's results.



## VIII. COST OF THE SURVEY

Since some of the survey work was undertaken by staff who were employed only part-time on the survey and many of the non-labour costs are purely nominal involving no actual cash disbursement on the part of the Ministry, it is impossible to give a precise figure for the total cost of the 1962 survey of road transport. The best estimate that can be made indicates a figure in the region of £64,000, or about £15K per completed questionnaire received. A breakdown of the total cost is as follows:-

	£
1. <u>Labour</u>	
(a) Clerical	44,000
(b) Machine staff	2,000
(c) Supervising and directing	15,000
Total	61,000
2. <u>Machines</u> (time basis)	1,000
3. <u>Other</u>	
(a) Stationery and materials	600
(b) Postage and telephone	1,000
(c) Payments to agencies	400
Total	2,000
Total cost	64,000

The labour costs include wages and salaries paid, pension and insurance contributions, cost of the space occupied by survey staff, together with the cost of sundry overheads such as office cleaning, lighting, heating, etc. The agency costs include payments to a commercial agency for assistance with the card punching.

## IX. SOME LESSONS

Although the 1962 Survey was successful in achieving its aim a number of lessons were learnt from the survey that could be usefully incorporated in future surveys of road goods transport. The purpose of this final chapter is therefore to list the main lessons that emerged from the survey work and to examine methods by which the deficiencies could be overcome.

### *Accuracy of the frame*

The first major difficulty that was encountered during the inquiry concerned the accuracy of the frame from which the sample had been drawn. Inaccuracies had been expected to occur in the unrevised index from which the sample of 'C' vehicles were selected, but since the sample of public haulage vehicles had been drawn from the revised index of these vehicles, no defects were expected in the public haulage sample. The survey showed, however, that although the total number of vehicles in the index was accurate, their distribution between the various unladen weight groups contained inaccuracies in that the numbers of the lighter public haulage vehicles were overstated, while the heavier vehicles were understated by the index. The main reason for this defect appeared to be a failure on the part of some Traffic Areas to record the unladen weight of the semi-trailer with the drawing unit when classifying the unladen weight of an articulated vehicle.

Following this discovery, the index was re-checked and amended where necessary. Furthermore, the information obtained from the sample concerning numbers of transfers between unladen weight strata, was used to obtain a revised estimate of the public haulage vehicle population, analysed by unladen weight. The main survey results were not affected, however, since the change in the number of units in the universe could be allowed for before grossing up the sample.

#### *Design of sample*

Apart from the unsatisfactory nature of the vehicle unladen weight as a basis for stratification, which has already been commented upon in page 30 the design of the vehicle sample proved satisfactory. Despite a small sample of only some 40,000 vehicles, less than 3 per cent of the universe, the sampling error in the overall estimate of the work performed by road transport was very small (less than  $\pm 1$  per cent). The main reason for this is the use of variable sampling fractions - sampling fractions were allocated to the different strata so that the strata that displayed large variability in total transport performed were sampled more intensively than those displaying small variability. Also, in the case of 'C' licensed vehicles, the sampling fractions were allocated so that the lightest\* vehicles (which, relative to their numbers, perform very little goods transport) were very lightly sampled (1 in 500).

The sampling error was also within the acceptable limit of  $\pm 5$  per cent in most licence category/unladen weight cells; only in the cells for the lighter public haulage vehicles, which are sparsely populated and do not form important domains of study, was the sampling error greater than  $\pm 5$  per cent.

The method of sampling over time by taking 1 week in every 13 proved satisfactory in the case of the estimates of the vehicle fleet characteristics and the estimates of the total mileage, tonnage, ton mileage performed by road vehicles, analysed by length of haul, industry, origin and destination, etc. But as regards the estimates of commodities moved by road transport, since considerable seasonal variation occurs in the type of commodity carried, a sample consisting of only four weeks spread throughout the year may have proved rather small. To chart commodity movements accurately, a larger sample of weeks is considered advisable; 1 week in every 4 would seem sufficient to cope with seasonal variability.

The period in respect of which data was collected, i.e., one complete week from midnight Sunday to midnight the following Sunday, proved most satisfactory since it coincided with the normal weekly cycle in road transport operations.

#### *Design of questionnaire*

Except for a minor point, the questionnaires used for the inquiry proved satisfactory in all respects. The exception concerned the use of an abbreviated form for light 'C' vehicles. Since the number of these vehicles that were included in the survey was fairly small, only about 1,000, the need to provide separate instructions for handling the forms and to establish separate routines for processing, etc., seriously outweighed the advantages the forms may have had in other respects. For future surveys, therefore, it is recommended that only two versions of the questionnaire should be used, one for public haulage and one for 'C' vehicles.

---

\*The definition of a light 'C' vehicle used for the purpose of the 1962 Survey was 'a vehicle not exceeding 1 ton unladen weight'. In future surveys the definition could be usefully extended to vehicles not exceeding 1½ tons unladen weight because the vehicles in the range 1 to 1½ tons tend to display the same characteristics as the lighter vehicles, e.g., they perform only a small amount of transport in relation to their numbers, they are employed predominantly on intermediate work over short distances, etc.

\*Except in the case of short distance movements by light vans, which tend to be extremely variable. Many of these vans are used for private purposes as well as for goods transport and their pattern of usage probably has a greater similarity to private car usage, falling off in winter months and building up during the spring and summer months.

## Organization of the survey

As the methods of handling a survey will depend to a very large extent on the resources available, and these will probably vary from one survey to the next, it is not intended to make a critical examination of the organization of the 1962 survey. Given the staff and machines that were available, the survey work progressed smoothly and efficiently throughout. But, naturally, if more resources could have been devoted to the survey, for example, a computer instead of a mechanical tabulator, efficiency may have been greater and results available more quickly.

One interesting development occurred during the data processing, however, which is worth drawing attention to. This concerns the use of desk calculating machines. In the belief that they would increase speed and efficiency, desk machines were provided fairly liberally and staff were encouraged to use them for all arithmetical work, but during the course of the survey it was found that simpler computational aids, for example, ready reckoners, were more suitable for many tasks. This occurred wherever there was repeated application of the same multiplier. Special tables were therefore compiled to cover these parts of the arithmetic and they were distributed amongst the staff; it was found that in these cases the work progressed faster than when desk machines had been used. Thus, when planning survey work, consideration should be given to the relative advantages of calculating machines vis-a-vis more simple computational aids for different parts of the arithmetic.

## Extrapolation

In this final section it is proposed to say a brief word about the problems associated with extrapolating the survey results, which are in respect of 1962, to years following the survey year. Three methods are available on which to base estimates of changes in road transport. Firstly, the figures could be extrapolated on the basis of data on changes in goods vehicle mileages obtained from road-side traffic counts. Secondly, extrapolation could occur on the basis of the relationship between the gross domestic product, or preferably, a transport weighted gross domestic product, and road transport; (a transport weighted G.D.P. is G.D.P. weighted to allow for the different demands that various industries make on inland transport). Thirdly, estimates could be derived each year based on the numbers of goods vehicles in use, analyzed by appropriate licence category/unladen weight cells, multiplied by the cell means obtained in the 1962 survey. Each of these methods has its disadvantages however; these are discussed in the following paragraphs.

## The traffic count results method

The most serious criticism of this method is its failure to record accurately the change in road transport in the period 1958-1962. In this period, traffic count data were used to extrapolate the results of the 1958 survey of road goods transport, but, as the 1962 survey results eventually showed, the estimates obtained by this method understated the growth in road ton mileage by about 2% per cent per annum.

It is believed that the main cause of this understatement lies in the inadequate breakdown available from the traffic counts of the changes in vehicle mileage by various vehicle size groups. Only two types of goods vehicle are distinguished, light vans of up to 1½ tons unladen weight and 'other' goods vehicles, i.e. all vehicles over 1½ tons unladen weight. Since there has been a large increase in the numbers of heavy goods vehicles (unladen weight over 5 tons) in recent years, compensated to some extent by a decline in the medium-heavy vehicles (2 to 3 tons unladen weight), the traffic figures for the class as a whole do not reflect the changing composition of the vehicle fleet and, as the average heavy vehicle performs much more ton mileage per annum than a lighter vehicle, this means that total ton mileage is bound to be understated by the traffic count data. It is interesting to note, however, that the traffic counts give fairly reliable extrapolations for transport growth measured in tons.

Investigations are therefore being made to determine whether a finer breakdown of the 'other' goods vehicle class into, for example, 2 axle and 3 or more axled vehicles, will enable more reliable estimates of the change in road transport to be derived by this method.

An examination of the relationship between the G.D.P., expressed at constant prices, and total inland transport, measured in tons and ton miles, in the period 1952-62 has revealed that whereas there is strong correlation between G.D.P. and tonnage transported, the correlation between G.D.P. and ton miles performed is rather poor; during some periods ton mileage increases at a faster rate than G.D.P., at other times slower. A study of the relationship between transport and a transport weighted G.D.P. gives rather better results, but for the purpose of measuring short-term changes in transport growth (i.e. the annual changes for the 4 or 5 years between survey years), this method yields estimates which at best are only fairly good.

A further drawback to using this method is that unless figures are available for the other modes of inland transport, the correlations have to be made between G.D.P. and road transport alone, and extrapolations based on this relationship cannot take into account changes in the competitive situation between road and other forms of inland transport.

#### *Vehicle population multiplied by vehicle averages*

Statistics of the number of goods vehicles in use each year in Great Britain, analysed by licence category and unladen weight group, are available from the goods vehicle index while the average mileage, tonnage and ton mileage performed by a vehicle in each licence category/unladen weight group is obtainable from the 1962 survey. These averages can be applied to the changing vehicle populations to obtain an estimate of the transport performed by road vehicles each year. This method assumes, however, that the average mileage, etc. is constant from one year to the next and although, as the comparison of the means obtained in the 1958 and 1962 surveys showed, this is true of most licence class/unladen weight cells, in possibly the most important unladen weight stratum, i.e. over 5 tons, the mean tonnage and ton mileage is increasing. Extrapolations based on this method cannot, therefore, be very reliable.

#### *Conclusion*

To summarise these methods: It would seem that the one that holds out the greatest promise is the method based on traffic count data. This method is already yielding fairly good estimates of changes in tonnage carried by road and if the investigations prove successful, the more detailed analysis of the mileage performed by the heavy goods vehicles may form the basis for a reliable estimate of the trend in the ton mileage performed by road vehicles.

It should be noted, however, that this method (and the others that have been mentioned) yields estimates of only the mileage, tonnage and ton mileage performed in the years between major surveys. No extrapolations can be made of the commodities carried nor of the direction of transport flows - both of which may be changing from one year to the next due to, for example, growth of different industries, changes in the location of industry, etc. Detailed information of this nature can only be obtained by means of a continuous survey of road goods vehicles.

A continuous survey of vehicles need not be on a large scale - only some five to seven thousand vehicles need be sampled during any one year. To chart seasonal variations adequately and to spread the work load the sample could be fairly evenly spread throughout the year with about 500 vehicles being sampled each month. Moreover, sampling units need be drawn only from vehicles of unladen weight exceeding 3 tons; this part of the goods vehicle population accounts for about 70 per cent of the total tonnage moved by road transport and for 80 per cent of the ton mileage, yet in terms of numbers of vehicles it forms only 20 per cent of the total. Variable sampling fractions could be used and the heaviest vehicles sampled most intensively, for example, one in ten of the vehicles of unladen weight over 8 tons, one in thirty of the vehicles between 5 and 8 tons, one in fifty of the 3 to 5 ton vehicles. It is estimated that a sample of this nature would not only yield highly reliable estimates of the transport performed by road vehicles for the years between major surveys, but also useful information would be provided on the commodities moved, the origin and destination of transport flows, the characteristics of the vehicle fleet, etc.



THE QUESTIONNAIRES USED  
FOR THE 1962 SURVEY



## SAMPLE SURVEY OF GOODS VEHICLES

Ministry of Transport  
(Statistics Division)  
St. Christopher House  
Southwark Street  
London, S.E.1.

Reference 7999  
Ext. 3779  
or 3889  
or 2620

Please quote this  
number in my  
communication

Parts 2 and 3 of  
this form relate  
only to the vehicle  
with this registra-  
tion mark

If this name and address is incorrect in any particular,  
please correct it.

Dear Sir(s),

The Minister of Transport, as you may already have seen in the Press or heard from your Association, is conducting a survey of the transport of goods by road by means of a sample survey of goods vehicles. The vehicle specified above has been selected for inclusion in the sample, and you are required, under Section 1 of the Statistics of Trade Act, 1947, to provide the information requested on pages 2 and 3 of this form, and to return the completed form to the Ministry of Transport at the address given above.

The return is required for the purpose of improving and extending the information available about the transport of goods by road in this country. The more information the Government has about road transport operations, the better able it is to assess future demands on the road system. Moreover the results of this inquiry will give a better appreciation of the developments taking place in the country's goods transport system, and enable an assessment to be made of the contribution which road transport is making to the total inland movement of freight traffic in Great Britain.

You will notice that even in a fairly large scale inquiry of this nature, an approach is made only to a sample of operators and not to all. Furthermore, information is collected in respect of only a small number of vehicles. Therefore, in order that the results of the inquiry may reflect the experience of all kinds of operators and all types of vehicles, it is necessary for every operator included in the sample to complete and return the form in respect of the vehicle actually selected. IF THE VEHICLE HAS BEEN SCRAPPED OR IS NO LONGER IN YOUR POSSESSION, PLEASE INDICATE THIS AND RETURN THIS FORM BY 1962.

The week to be covered by the questionnaire begins on Monday morning January 7th, 1963, and ends at midnight on Sunday January 13th, 1963. The form should be accurately completed in all particulars and returned to this office not later than January 24th, 1963: a franked addressed envelope is enclosed for this purpose.

The questionnaire has been divided into three sections: part 1 relates to the whole of your fleet of vehicles, part 2 asks for details only of the vehicle specified above, and part 3 is intended to serve as a record of that vehicle's work during the week of the inquiry.

If the vehicle is not used at all during the week of the inquiry, or is engaged wholly on work off the public highway (e.g. on-site work), parts 1 and 2 and the first column only of part 3 should be completed.

Before completing the form would you please read the notes on pages 2 and 4? If you have any queries we shall be glad to answer them: our address and telephone number are given at the top of this page.

The information provided by you will be treated as strictly confidential, as provided in the Act, and will be used solely in the compilation of general statistical results. These will be prepared and published in a way which will not reveal the particulars relating to any individual undertaking unless the written consent of that undertaking has been asked for and has been given.

The Minister trusts that you will co-operate with the investigations by completing your return promptly and with care.

Yours faithfully,



## PART 1: DETAILS OF THE VEHICLE FLEET

## NOTES

Do not leave blanks - if none, state NONE.

Question 1: The 'fleet' should be defined as the number of vehicles authorised on carrier's licences AT THE SAME TRAFFIC AREA OFFICE under the same name or legal entity.

1. Number of vehicles in fleet (see note) (a) on A, Contract A and B licences _____ (b) on C licences _____	3. Number of articulated vehicles included in (1) _____
2. Number of the vehicles included in (1) above which had current ex-man licences during the week of the inquiry (a) _____ (b) _____	4. Number of trailers in fleet:- Semi-trailers _____ Drawbar and bogie trailers _____
	5. Number of containers (liftvans) in fleet _____

## PART 2: DETAILS OF THE VEHICLE SPECIFIED ON PAGE 1

Answer questions 1, 2, 3, 6 &amp; 7, by placing a tick in the appropriate box.

1. Class of carrier's licence 1 <input type="checkbox"/> A 2 <input type="checkbox"/> Contract A 3 <input type="checkbox"/> B	4. Is the vehicle an articulated vehicle? 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No
2. If "B" licence, state whether the vehicle was used during the week mainly for the carriage of goods on:- 1 <input type="checkbox"/> own account 2 <input type="checkbox"/> hire or reward	7. Type of body 1 <input type="checkbox"/> Tipper (not tanker) 2 <input type="checkbox"/> Flatbed or sided 3 <input type="checkbox"/> Insulated or refrigerated van 4 <input type="checkbox"/> Box body 5 <input type="checkbox"/> Tanker, liquids 6 <input type="checkbox"/> Tanker or other bulk carrier, solids 7 <input type="checkbox"/> Livestock carrier 8 <input type="checkbox"/> Other (Describe) _____
3. Type of fuel 1 <input type="checkbox"/> Petrol 2 <input type="checkbox"/> Diesel 3 <input type="checkbox"/> Other	
4. Year of first registration _____	6. Carrying Capacity _____ tons _____ cwt
5. Unladen weight _____ tons _____ cwt	

To the best of my knowledge and belief the information given in this return is complete and correct.

Date \_\_\_\_\_ Signature \_\_\_\_\_

Telephone No. \_\_\_\_\_ Status in Organisation \_\_\_\_\_  
(e.g. Proprietor, Director, Manager)

Address where vehicle specified is normally garaged \_\_\_\_\_

Available for purchase on mobile.

### Corrigan<sup>4</sup> a Lapsus mentis?

[illegible]

Figure 8. (Conte found to meet even if necessary)

# NOTES ON COMPLETING PART 3 OF THE FORM

## 1. General notes

Please start by entering the carrier's licence number and the registration number of the specified vehicle at the head of the page. Enter last each journey made during the week, except in those cases where a number of identical journeys are made (see below). Record the day of the week in column (1) followed by particulars of the journey in columns (2) and (3). If a carrier or logistic provider has not used a trailer, it was used, the carrying capacity of the trailer should be shown in column (4). Finally, the goods carried should be stated in column (5).

For identical journeys you should state the number of journeys made on each day in column (2) and give details of one journey only in the other columns. Each day's journeys should be recorded separately. A journey which takes more than one day should be counted as one journey.

## 2. Day of week (column 1)

Include days when the vehicle was not in use and give the reason, e.g. holiday, no work, repairs, etc. If the vehicle was used wholly off the public highway, e.g. on site work, say so, and leave column (2) to (6) uncompleted.

## 3. Journey (columns 2)

Give the starting point and destination for each journey. Where journey is from or to docks this should be indicated.

For category B journeys (see note 4), if collecting and delivery stops are few, (as for example, on a journey from London to Gillingham or Gillingham to London) these stops should be shown in column (3). If, however, the journey is a circular trip with many collecting or delivery points, as, for example, in local delivery work, this should be stated in column (3); intermediate points need not then be given.

## 4. Nature of journey (column 4)

A distinction is made between those journeys, described as category A, which involve a straight run with no collecting or delivery point along the route, and those of category B, which involve collecting and/or picking up goods at several points during the journey. For each journey listed you should decide into which category it falls, and enter the details of the journey (i.e. miles run and tons carried), in the appropriate columns. PLEASE NOTE YOU SHOULD NOT COMPLETE MORE THAN ONE JOURNEY FOR ANY ONE JOURNEY. For category A journeys, show a separate journey each trip which involves carrying a load from a single pick-up point to a single destination where the whole load is dropped.

Each empty run from base to pick-up point, or from one dropping-off point to another collecting point, and each empty run from dropping-off point back to base should also be recorded as a separate journey.

If the journey consists solely of long distances straight run but there are several stops for picking up goods at destinations to trip, or for collecting at the end of trip (for example, a haul from London to Birmingham, but two or more stops in Birmingham to unload) this should be counted as a single journey in category A.

In category B count as single journeys all circular trips, and all other trips of a mainly circular nature.

## 5. Tons carried

For loaded journeys you are asked to state the tonnage carried. If not known please estimate; where load is less than 1 ton, estimate to nearest  $\frac{1}{2}$  or  $\frac{1}{4}$  of 1 ton.

Exclude weight of 'containers' (or 'lift vans') where these are used. Record carriage of empties as a loaded journey, giving an estimate for the weight of the empties.

For category B journeys include the weight of the load, if any, at the start of the journey, plus any additional loads picked up along the route.

## SAMPLE SURVEY OF GOODS VEHICLES

Ministry of Transport  
(Statistics Division)  
St. Christopher House  
Southwark Street  
London, S.E.1.

Reference 1999  
Ext. 3379  
or 3380  
or 2639

← Please quote this number in any communication

← Parts 2 and 3 of this form relate only to the vehicle with this registration mark

└ If this name and address is incorrect in any particular, please correct it.

Dear Sir(s),

The Minister of Transport, as you may already have seen in the Press or heard from your Association, is conducting a survey of the transport of goods by road by means of a sample survey of goods vehicles. The vehicle specified above has been selected for inclusion in the sample, and you are required, under Section 1 of the Statistics of Trade Act, 1947, to provide the information requested on pages 2 and 3 of this form, and to return the completed form to the Ministry of Transport at the address given above.

The return is required for the purpose of improving and extending the information available about the transport of goods by road in this country. The more information the Government has about road transport operations, the better able it is to assess future demands on the road system. Moreover the results of this inquiry will give a better appreciation of the developments taking place in the country's goods transport system, and enable an assessment to be made of the contribution which road transport is making to the total inland movement of freight traffic in Great Britain.

You will notice that even in a fairly large scale inquiry of this nature, an approach is made only to a sample of operators and not to all. Furthermore, information is collected in respect of only a small number of vehicles. Therefore, in order that the results of the inquiry may reflect the experience of all kinds of operators and all types of vehicles, it is necessary for every operator included in the sample to complete and return the form in respect of the vehicle actually selected. IF THE VEHICLE HAS BEEN SCRAPPED OR IS NO LONGER IN YOUR POSSESSION - PLEASE INDICATE THIS AND RETURN THIS FORM AT ONCE.

The week to be covered by the questionnaire begins on Monday morning January 7th, 1953, and ends at midnight on Sunday January 13th, 1953. The form should be separately completed in all particulars and returned to this office not later than January 24th, 1953; a franked addressed envelope is enclosed for this purpose.

The questionnaire has been divided into three sections; part 1 asks for particulars of the business of the owner of the vehicle, part 2 asks for details of the vehicle (specified above), and part 3 is intended to serve as a record of that vehicle's work during the week of the inquiry.

If the vehicle is not used at all during the week of the inquiry, or is engaged wholly or work off the public highway (e.g. on-site work), parts 1 and 2 and the first column only of part 3 should be completed.

Before completing the form would you please read the notes on pages 2 and 4? If you have any queries we shall be glad to answer them; our address and telephone number are given at the top of this page.

The information provided by you will be treated as strictly confidential, as provided in the Act, and will be used solely in the compilation of general statistical results. These will be prepared and published in a way which will not reveal the particulars relating to any individual undertaking unless the written consent of that undertaking has been asked for and has been given.

The Minister trusts that you will co-operate with the investigations by completing your return promptly and with care.

Yours faithfully,

# PART 1: DETAILS OF BUSINESS

## NOTES:

Question 1: Where the vehicle is owned by a transport subsidiary of a parent company, give the nature of the business of the parent company.

Question 2: Answer by placing a tick in the appropriate box.

1. Nature of business of owner of vehicle (describe)	
2. Is business mainly a manufacturing activity	<input type="checkbox"/>
or building and construction	<input type="checkbox"/>
or wholesale distribution	<input type="checkbox"/>
or retail distribution	<input type="checkbox"/>
or other activity	<input type="checkbox"/>

## PART 2: DETAILS OF THE VEHICLE SPECIFIED ON PAGE 1

Answer questions 1, 2, 5 and 6 by placing a tick in the appropriate box.

1. Indicate type of work vehicle mainly engaged on during the week	4. Year of first registration:
1. <input type="checkbox"/> Retail delivery in urban areas	5. Is the vehicle an articulated vehicle?
2. <input type="checkbox"/> Retail delivery in mainly rural areas	1. <input type="checkbox"/> Yes
3. <input type="checkbox"/> Wholesale delivery (including finished goods from docks)	2. <input type="checkbox"/> No
4. <input type="checkbox"/> Maintenance and repair work	6. Type of body
5. <input type="checkbox"/> Carriage of materials to or from building sites	1. <input type="checkbox"/> Tipper (not tanker)
6. <input type="checkbox"/> Delivery of materials (new or semi-finished) or fuel to factories	2. <input type="checkbox"/> Platform or aided
7. <input type="checkbox"/> Delivery of export goods to docks	3. <input type="checkbox"/> Insulated or refrigerated van
8. <input type="checkbox"/> Other: describe _____	4. <input type="checkbox"/> Box body
9. <input type="checkbox"/> Not working	5. <input type="checkbox"/> Tanker, liquids
2. Type of fuel	6. <input type="checkbox"/> Tanker or other bulk carrier, solids
1. <input type="checkbox"/> Petrol	7. <input type="checkbox"/> Livestock carrier
2. <input type="checkbox"/> Diesel	8. <input type="checkbox"/> Other: describe _____
3. <input type="checkbox"/> Other	7. Carrying capacity: _____ tons _____ cwt.
3. Unladen weight: _____ tons _____ cwt.	

To the best of my knowledge and belief the information given in this return is complete and correct.

Date \_\_\_\_\_ Signature \_\_\_\_\_

Telephone No. \_\_\_\_\_ Status in organisation (e.g. Proprietor, Director, Manager, etc.)

Address where vehicle specified is normally garaged \_\_\_\_\_

## (QUESTIONNAIRE FOR 'C' LICENCE VEHICLES OF NOT OVER 1 TON UNLADEN WEIGHT)

## PART 3: RECORD OF WEEK'S WORK OF VEHICLE SPECIFIED ON PAGE 1

Carrier's licence number: \_\_\_\_\_ Vehicle registration mark: \_\_\_\_\_

(1) Day	(2) Number of journeys made (see note 1 overleaf)	(3) Miles run with a load of goods	(4) Miles run empty (see note 2)	(5) Estimated tons carried (see note 3)	(6) For Ministry use	(7) Commodities carried (state main types)	For Ministry use
Monday							
Tuesday							
Wednesday							
Thursday							
Friday							
Saturday							
Sunday							
TOTAL							

Mileage run by the vehicle during the survey week for purposes other than the carriage of goods, if any. (See note 4 overleaf).

\_\_\_\_\_ miles

NOTES ON THE COMPLETION OF PART 3 OF THE FORM

1. Count as single journeys all outward trips, whether they are straight runs from single collecting to single delivery points, or whether they are runs with a number of collecting and delivery points along the route.

In all cases, except circular journeys, count the return journey as a separate journey. Count a journey which takes more than one day as one journey.

Include empty journeys made in order to collect goods or in returning to base after delivering goods, but exclude any journeys made for purposes other than the carriage of goods.

2. Give empty mileage run in order to collect goods, or in returning to base after delivering goods. The carriage of empties should be counted as a loaded journey, not as empty mileage.
3. Give your best estimate of the tonnages carried. Where the load is less than one ton, estimate to the nearest  $\frac{1}{2}$ ,  $\frac{3}{4}$  or  $\frac{1}{2}$  ton. Include the load, if any, at the start of the journey plus any additional loads picked up along the route.
4. State here any mileage run for purposes other than the carriage of goods, for example other business use, home-to-office running, or personal use of the vehicle. Only the mileage figure is required; if not known please estimate.

## SAMPLE SURVEY OF GOODS VEHICLES

Ministry of Transport  
(Statistics Division)  
St. Christopher House  
Southwark Street  
London, S.E.1.

WATERLOO 7999  
Ext. 3379  
or 3380  
or 3620

Please quote this  
number in any  
communication

Parts 2 and 3 of  
this form relate  
only to the vehicle  
with this registra-  
tion mark.

If this name and address is incorrect in any particular,  
please correct it.

Dear Sir(s),

The Minister of Transport, as you may already have seen in the Press or heard from your Association, is conducting a survey of the transport of goods by road by means of a sample survey of goods vehicles. The vehicle specified above has been selected for inclusion in the sample, and you are required, under Section 1 of the Statistics of Trade Act, 1947, to provide the information requested on pages 2 and 3 of this form, and to return the completed form to the Ministry of Transport at the address given above.

The return is required for the purpose of improving and extending the information available about the transport of goods by road in this country. The more information the Government has about road transport operations, the better able it is to assess future demands on the road system. Moreover the results of this inquiry will give a better appreciation of the developments taking place in the country's goods transport system, and enable an assessment to be made of the contribution which road transport is making to the total inland movement of freight traffic in Great Britain.

You will notice that even in a fairly large scale inquiry of this nature, an approach is made only to a sample of operators and not to all. Furthermore, information is collected in respect of only a small number of vehicles. Therefore, in order that the results of the inquiry may reflect the experience of all kinds of operators and all types of vehicles, it is necessary for every operator included in the sample to complete and return the form in respect of the vehicle actually selected. IF THE VEHICLE HAS BEEN SCRAPPED OR IS NO LONGER IN YOUR POSSESSION, PLEASE INDICATE THIS AND RETURN THIS FORM AT ONCE.

The week to be covered by the questionnaire begins on Monday morning January 7th, 1963, and ends at midnight on Sunday January 13th, 1963. The form should be accurately completed in all particulars and returned to this office not later than January 24th, 1963: a franked addressed envelope is enclosed for this purpose.

The questionnaire has been divided into three sections: part 1 asks for particulars of the business of the owner of the vehicle, part 2 asks for details of the vehicle (specified above), and part 3 is intended to serve as a record of that vehicle's work during the week of the inquiry.

If the vehicle is not used at all during the week of the inquiry, or is engaged wholly on work off the public highway (e.g. on-site work), parts 1 and 2 and the first column only of part 3 should be completed.

Before completing the form would you please read the notes on pages 2 and 3? If you have any queries we shall be glad to answer them: our address and telephone number are given at the top of this page.

The information provided by you will be treated as strictly confidential, as provided in the Act, and will be used solely in the compilation of general statistical results. These will be prepared and published in a way which will not reveal the particulars relating to any individual undertaking unless the written consent of that undertaking has been asked for and has been given.

The Minister trusts that you will co-operate with the investigations by completing your return promptly and with care.

Yours faithfully,



## PART 1: DETAILS OF BUSINESS

## NOTES:

Question 1: Where the vehicle is owned by a transport subsidiary of a parent company, give the nature of the business of the parent company.

Question 2: Answer by placing a tick in the appropriate box.

1. Nature of business of owner of vehicle (describe) \_\_\_\_\_

2. Is business mainly a manufacturing activity ☐  
 or building and construction ☐  
 or wholesale distribution ☐  
 or retail distribution ☐  
 or other activity ☐

## PART 2: DETAILS OF THE VEHICLE SPECIFIED ON PAGE 1

Answer questions 1, 2, 5 and 6 by placing a tick in the appropriate box.

1. Indicate type of work vehicle mainly engaged on during the week

- 1 ☐ Retail delivery in urban areas  
 2 ☐ Retail delivery in mainly rural areas  
 3 ☐ Wholesale delivery (including finished goods from docks)  
 4 ☐ Maintenance and repair work  
 5 ☐ Carriage of materials to or from building sites  
 6 ☐ Delivery of materials (raw or semi-finished) or fuel to factories  
 7 ☐ Delivery of export goods to docks  
 8 ☐ Other: describe \_\_\_\_\_  
 9 ☐ Not working

2. Type of fuel

- 1 ☐ Petrol  
 2 ☐ Diesel  
 3 ☐ Other

4. Year of first registration: \_\_\_\_\_

5. Is the vehicle an articulated vehicle?

- 1 ☐ Yes  
 2 ☐ No

6. Type of body

- 1 ☐ Tipper (not tanker)  
 2 ☐ Platform or sided  
 3 ☐ Insulated or refrigerated van  
 4 ☐ Box body  
 5 ☐ Tanker, liquids  
 6 ☐ Tanker or other bulk carrier, solids  
 7 ☐ Livestock carrier  
 8 ☐ Other: describe \_\_\_\_\_

7. Carrying capacity: \_\_\_\_\_ tons \_\_\_\_\_ cwt.

8. Unladen weight: \_\_\_\_\_ tons \_\_\_\_\_ cwt.

To the best of my knowledge and belief the information given in this return is complete and correct.

Date \_\_\_\_\_ Signature \_\_\_\_\_

Telephone No. \_\_\_\_\_ Status in organisation  
 (e.g. Proprietor, Director, Manager, etc.)

Address where vehicle specified  
 is normally garaged \_\_\_\_\_

Widespread in woods and cultivated areas.

[illegible]

NOTES ON COMPLETING PART 3 OF THE FORM

1. General notes

Please start by entering the carrier's licence number and the registration number of the specified vehicle at the head of the page. List each journey made during the week, except in those cases where a number of identical journeys are made (see below). Enter the day of the week in column (1) followed by particulars of the journey in columns (3) and (4). If drabber or bogie trailer (but not semi-trailer) was used, the carrying capacity of the trailer should be shown in column (3). Finally, the goods carried should be stated in column (6). For identical journeys you should state the number of journeys made on each day in column (2) and give details of one journey only in the other columns. Each day's journeys should be recorded separately. A journey which takes more than one day should be treated as one journey.

2. Use of week (column 1)

Indicate days when the vehicle was not in use and give the reason, e.g. holiday, no work, repairs, etc. If the vehicle was used wholly off the public highway, e.g. on site work, say so, and leave columns (2) to (6) uncompleted.

3. Journey (column 3)

Give the starting point and destination for each journey. Where journey is from or to docks this should be indicated.

For Category B journeys (see note 4), if collecting and delivery steps are few, (as for example, on a journey from London - Croydon - Middlesbrough - London) these steps should be shown in column (3). If, however, the journey is a circular trip with many collecting or delivery points, as, for example, in local delivery work, this should be stated in column (3); intermediate points need not then be given.

4. Nature of journey (column 4)

A distinction is made between those journeys, described as Category A, which involve a straight run with no collecting or delivery point along the route, and those of Category B which involve setting down or picking up goods at several points during the journey. For each journey listed you should decide into which category it falls, and enter the details of the journey, i.e. dates run and tons carried, in the appropriate columns. PLEASE NOTE YOU SHOULD NOT COMPLETE BOTH A AND B COLUMNS IN RESPECT OF ANY ONE JOURNEY. For Category A journeys, show as a separate journey each trip which involves carrying a load from a single pick-up point to a single destination where the whole load is dropped.

Each empty run from here to pick-up point, or from one dropping-off point to another collecting point, and each empty run from dropping-off point back to base should also be recorded as a separate journey.

If the journey consists mainly of a long distance straight run but there are several stops for picking up done at beginning of trip, or for unloading at the end of trip (for example, a haul from London to Birmingham, but two or more stops in Birmingham to unload) this should be treated as a single journey in Category A.

In Category B count as single journeys all circular trips, and all other trips of a mainly circular nature.

5. Tonnage carried

For loaded journeys you are asked to state the tonnage carried. If not known please estimate; where load is less than 1 ton, estimate to nearest  $\frac{1}{2}$ ,  $\frac{2}{3}$  or 3 tons.

Exclude weight of "containers" (or "lift vans") where these are used. Record carriage of empties as a loaded journey, giving an estimate for the weight of the empties.

For Category B journeys include the weight of the load, if any, at the start of the journey, plus any additional loads picked up along the route.